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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/510,295	10/06/2004	Gwenaelle Marquant	FR 020033	6538

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EXAMINER	
HOLDER, ANNER N	

ART UNIT	PAPER NUMBER
2621	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/510,295	MARQUANT ET AL.	
	Examiner	Art Unit	
	Anner Holder	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 13 and 16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows the claimed invention is directed to non-statutory subject matter. Claims 13 and 16 recites "a computer usable medium having a computer readable program code" which does not impart functionality to a computer or computing device, and is thus considered nonfunctional descriptive material. Such nonfunctional descriptive material, in the absence of a functional interrelationship with a computer, does not constitute a statutory process, machine, manufacture or composition of matter and is thus non-statutory per se.

Double Patenting

3. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

4. Claims 1, 10, 13, 14, 15, 16 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-6 of copending Application No. 10/505498. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 10 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Golin et al. (Golin) US 4,868,653 in view of Demos US 2003/0112863.

7. As to claim 1, Golin teaches coding an input digital video sequence corresponding to an original color image sequence represented by color space components defined in a first color space, [Abstract; Col. 5 Lines 7-10] said method comprising at least the following steps: (1) a converting step, for converting said video sequence from the original spatial domain to less

representation data; [Fig. 2 (230); Fig. 16 (1610, 1620); Col. 11 Lines 16-25] (2) a quantizing step, for transforming the converted signals thus obtained into a reduced set of data; [Fig. 16 (1630); Col. 11 Lines 26-28] (3) an encoding step, for coding said reduced set of data; [Fig. 16 (1640); Col. 9 Lines 45-48; Col. 11 Lines 28-30] said coding method being further characterized in that it also comprises : before the converting step, a pre-processing step, for determining if the color space of the input video sequence is the YUV color space, where Y is luminance component and U, V the chrominance components, and transforming said YUV color space into a less redundant color space. [Fig. 2 (220); Col. 7 Lines 65-67; Col. 8 Lines 59-67] .

Golin does not teach converting by means of a non-linear transformation taking into account the possible lower quality finally obtained.

Demos teaches converting by means of a non-linear transformation taking into account the possible lower quality finally obtained. [Pg 4 ¶0070-0082]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the non-linear transformation with coding device of Golin to improve compressed chorma information. [Demos – abstract]

8. As to claim 10, see rejection of claim 1, except it is a claim to a device with the same limitations as claim 1.

9. As to claim 13, see rejection of claim 1, except it is a claim to system having computer readable program code with the same limitations as claim 1.

10. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Golin et al. (Golin) US 4,868,653 in view of Demos US 2003/0112863 further in view of Gerard US 4,827,338.

11. As to claim 14, Golin teaches coding an input digital video sequence corresponding to an original color image sequence represented by color space components defined in a first color space, [Abstract] said method comprising at least the following steps: (1) a converting step, for converting said video sequence from the original spatial domain to less representation data; [Fig. 2 (230); Fig. 16 (1610, 1620); Col. 11 Lines 16-25] (2) a quantizing step, for transforming the converted signals thus obtained into a reduced set of data; [Fig. 16 (1630); Col. 11 Lines 26-28] (3) an encoding step, for coding said reduced set of data; [Fig. 16 (1640); Col. 9 Lines 45-48; Col. 11 Lines 28-30] said coding method being further characterized in that it also comprises : before the converting step, a pre-processing step, for determining if the color space of the input video sequence is the YUV color space, where Y is luminance component and U, V the chrominance components, and transforming said YUV color space into a less redundant color space [Fig. 2 (220); Col. 7 Lines 65-67; Col. 8 Lines 59-67]

Golin does not teach converting by means of a non-linear transformation taking into account the possible lower quality finally obtained.

Demos teaches converting by means of a non-linear transformation taking into account the possible lower quality finally obtained. [Pg 4 ¶0070-0082]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the non-linear transformation with coding device of Golin to improve compressed chorma information. [Demos – abstract]

Golin (modified by Demos) does not specifically teach said decoding method comprising at least the following steps: (1) a decoding step, for decoding said coded signals; (2) an inverse quantizing step, for transforming the decoded signals thus obtained into dequantized signals; (3)

an inverse transforming step, for converting said dequantized signals to signals in the spatial domain; (4) a post-processing step, provided for carrying out on the inverse converted signals thus obtained an inverse transformation with respect to the non-linear transformation provided in said pre-processing step.

Gerard teaches said decoding method comprising at least the following steps: (1) a decoding step, for decoding said coded signals; [Fig. 1 (6); Fig. 9; Col. 5 Line 60] (2) an inverse quantizing step, for transforming the decoded signals thus obtained into dequantized signals; [Col. 16 Lines 10-13] (3) an inverse transforming step, for converting said dequantized signals to signals in the spatial domain; [Col. 16 Lines 13-18] (4) a post-processing step, provided for carrying out on the inverse converted signals thus obtained an inverse transformation with respect to the non-linear transformation provided in said pre-processing step. [Col. 16 Lines 19-24]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the coding device of Golin modified by Demos with the coding device of Gerard, to improve the image quality at playback or display.

12. As to claim 15, see rejection of claim 14, except it is a claim to a device with the same limitations as claim 14.

13. As to claim 16, see rejection of claim 14, except it is a claim to system having computer readable program code with the same limitations as claim 14.

14. Claims 2-5, 11, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Golin et al. (Golin) US 4,868,653 in view of Demos US 2003/0112863 further in view of Ohara et al. (Ohara) US 6,529,211 B2.

As to claim 2, Golin (modified by Demos) teaches a coding method according to claim 1.

Golin (modified by Demos) does not specifically teach compressing the luminance dynamic by using a number M of grey levels lower than the original number N before said compression operation, said compression operation being characterized in that said luminance dynamic of N grey levels is divided into a central range [A; B] and two side ranges [0; A] and [B; N-l], and the original side ranges [0; A], [B; N-l] are transformed by means of the compression operation into transformed side ranges [0; C], [D ; M-l], with [0 ; C] lower than[0 ; A] and [D ; M-l] lower than [B ; N-l], the original central range [A ; B] being kept unchanged.

Ohara teaches luminance dynamic of N grey levels is divided into a central range [A; B] and two side ranges [0; A] and [B; N-l], and the original side ranges [0; A], [B; N-l] are transformed by means of the compression operation into transformed side ranges [0; C], [D; M-l], with [0; C] lower than [0; A] and [D; M-l] lower than [B; N-l], the original central range [A; B] being kept unchanged. [Fig. 1, Fig. 2; Fig.8H; Fig. 8I; Col. 5 Lines 34-54]

It would have been obvious at the time the invention was made to incorporate the teaching of Ohara to adjust pixel intensity by changing upper and lower ranges with the compression device of Golin modified by Demos. The combination enables improvements to perceived image quality while minimizing degradation of the image. [Ohara – Col. 1 Lines 23-24]

15. As to claim 3, Golin (modified by Demos and Ohara) teaches a coding method according to claim 2, characterized in that the compression in said side ranges is uniform. [Ohara - Fig. 1, Fig. 2; Fig.8H; Fig. 8I]

16. As to claim 4, Golin (modified by Demos and Ohara) teaches A coding method according to claim 1, in which said pre-processing step is an operation consisting in compressing the luminance dynamic by using a number M of grey levels lower than the original number N before said compression operation, said compression operation being characterized in that said luminance dynamic of N grey levels is divided into a central range [A; B] and two side ranges [0; A] and [B; N-1], and the original central range [A; B] and side ranges [0; A] [B; N-l] are transformed by means of the compression operation respectively into a transformed central range [C ; D] and into transformed side ranges [0 ; C], [D, M-l], with [0 ; C] lower than [0 ; A], [C ; D] lower than [A ; B] and [D ; M-l] lower than [B ; N-1], [Ohara - Fig. 1, Fig. 2; Fig.8H; Fig. 8I; Col. 5 Lines 34-54] the compression ratio applied to the original central range [A ; B] being lower than the one applied to the original side ranges. [Ohara - Fig. 8H – The values not within threshold and max should be obvious to one of ordinary skill in the art that the compression ratio is changing.

17. As to claim 5, Golin (modified by Demos and Ohara) teaches a coding method according to claim 4, characterized in that the compression ratio in said central and side ranges is uniform. [Ohara - Fig. 1, Fig. 2; Fig.8H; Fig. 8I]

18. As to claim 9, Golin (modified by Demos and Ohara) teaches a coding method according to claim 5, characterized in that, after the luminance dynamic compression, some transformed values are still clustered in the side ranges, in view of a further dynamic compression in said ranges. [Ohara – Fig. 8H; it would be obvious to one of ordinary skill in the art that the pixel values below the threshold or knee and those pixel values at the max are grouped together thus forming a cluster]

19. As to claim 11, Golin (modified by Demos) teaches a coding device according to claim 10.

Golin (modified by Demos) does not specifically teach compressing the luminance dynamic by using a number M of grey levels lower than the original number N before said compression operation, said compression operation being characterized in that said luminance dynamic of N grey levels is divided into a central range [A; B] and two side ranges [0; A] and [B; N-l], and the original side ranges [0; A], [B; N-l] are transformed by means of the compression operation into transformed side ranges [0; C], [D ; M-l], with [0 ; C] lower than[0 ; A] and [D ; M-l] lower than [B ; N-l], the original central range [A ; B] being kept unchanged.

Ohara teaches luminance dynamic of N grey levels is divided into a central range [A; B] and two side ranges [0; A] and [B; N-l], and the original side ranges [0; A], [B; N-l] are transformed by means of the compression operation into transformed side ranges [0; C], [D; M-l], with [0; C] lower than [0; A] and [D; M-l] lower than [B; N-l], the original central range [A; B] being kept unchanged. [Ohara - Fig. 1, Fig. 2; Fig.8H; Fig. 8I; Col. 5 Lines 34-54]

It would have been obvious at the time the invention was made to incorporate the teaching of Ohara to adjust pixel intensity by changing upper and lower ranges with the compression device of Golin modified by Demos. The combination enables improvements to perceived image quality while minimizing degradation of the image. [Ohara – Col. 1 Lines 23-24]

20. As to claim 12, Golin (modified by Demos and Ohara) teaches A coding device according to claim 10, in which said pre-processing means are a compression stage in which the luminance dynamic is reduced by using a number M of grey levels lower than the original

number N before compression, the compression operation being such that said luminance dynamic of N grey levels is divided into a central range [A; B] and two side ranges [0; A] and [B; N-l], and the original central range [A; B] and side ranges [0; A] [B; N-l] are transformed by means of the compression operation respectively into a transformed central range [C ; D] and into transformed side ranges [0 ; C], [D, M-l], with [0 ; C] lower than [0 ; A], [C ; D] lower than [A ; B] and [D ; M-l] lower than [B ; N-1], [Ohara - Fig. 1, Fig. 2; Fig.8H; Fig. 8I; Col. 5 Lines 34-54] the compression ratio applied to the original central range [A ; B] being lower than the one applied to the original side ranges. [Ohara - Fig. 8H – The values not within threshold and max should be obvious to one of ordinary skill in the art that the compression ratio is changing.

21. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Golin et al. (Golin) US 4,868,653 in view of Demos US 2003/0112863, in view of Ohara et al. (Ohara) US 6,529,211 B2 further in view of Potu US 6,219,457.

As to claim 6, Golin (modified by Demos and Ohara) teaches a coding method according to claim 2 and the luminance compression being progressively lessened in the part of each of said side ranges which is contiguous to the central range. [Ohara - Fig. 8H]

Golin (modified by Demos and Ohara) does not specifically teach compression in said side ranges is adaptive and piecewise continuous.

Potu teaches compression in said side ranges is adaptive and piecewise continuous, the luminance compression being progressively lessened in the part of each of said side ranges which is contiguous to the central range. [Col. 1 Lines 37-57]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Potu's teachings of adaptive compression with that of Golin's

compression device modified by Demos and Ohara, allowing for achievement of higher compression. [Col. 1 Line 38]

22. Regarding claims 7 and 8, although not disclosed, it would have been obvious to use either affine or sigmoid functions in image compression (Official Notice). Doing would have been obvious in order to be able to use the compression apparatus under a variety of conditions.

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Graffagnino (US Patent 6,031,937) teaches many transforms have non-linear, computational complexity.

Abe (US Patent 6,226,445) teaches image compression and an expansion device.

Harri Raittinen and Kimmo Kaski, "Image Compression with Affine Transforms", IEEE Winter Workshop on Nonlinear Digital Signal Processing (1993), 2.2 Pg 1.1-1.6 teaches the use of Affine transform in image compression.

Edward Dunstone, James Andrew, "Super-high Scale Invariant Image Compression Using a Surface Learning Neural Network", 1994 International Symposium on Speech, Image Processing and Neural Networks, 1994 IEEE 0-7803-184-X/94, Pg 397-400 teaches the use of Sigmoid functions in image compression.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anner Holder whose telephone number is 571-270-1549. The examiner can normally be reached on M-Th, M-F 8 am - 3 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dastouri Mehrdad can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ANH 06/12/07

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TC 2600